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UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

Project	Date	Author

TITLE

FOREST INSECT SURVEYS - SHASTA NATIONAL FOREST

Season of 1940

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by
N. D. Wygant
Berkeley, California
January 29, 1941

SUBJECT—

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Forest Insect Laboratory
Berkeley, California
January 29, 1941

FOREST INSECT SURVEYS - SHASTA NATIONAL FOREST

Season of 1940

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FOREST INSECT SURVEYS - SHASTA NATIONAL FOREST

Season of 1940

INTRODUCTION

The annual forest insect survey of the east side type of the Shasta National Forest was conducted by members of the Bureau of Entomology and Plant Quarantine during October 26-29 and November 11-16, 1940. Loss surveys of permanent sample plots together with a general reconnaissance survey of the area form the basis for this report. The four virgin plots in the Fall River Area (Fig. 1) were cruised by N. D. Wygant, E. G. List, Jr. and F. R. Throop. K. A. Salman assisted in the survey of the three cutover plots near Tennant (Fig. 2) and also assisted in the reconnaissance of unsampled areas. The plots are too few to give an adequate sample of the area as a whole and for that reason estimates of the total amount of loss on the unit areas have not been made.

The areas covered by the survey are the Fall River Area (Fig. 1), parts of the Siskiyou Area (Fig. 2), and McCloud River Basin (not shown on map). These areas were segregated by the Hazard Inventory into entomological units classified as to hazard of timber to loss by insects (1). The Burney Unit commonly included with the South Shasta Area will be reported upon at a later date by R. C. Hall.

CHARACTER OF THE 1940 INFESTATION

Except for possibly a few local areas, insect activity during 1940 appeared to be about the same as that during 1939. There were no indications in the 1940 infestation that any great change in insect activity could be expected during 1941. The infested trees for the most part occurred singly or in small scattered groups of 3 or 4 trees with a few groups containing as many as 10 trees. Basal examination of the trees showed that the western pine beetle was responsible for most of the loss. A small percent of the infested trees contained flatheads or mixed broods of flatheads and western pine beetle.

INFESTATION CHARACTERISTICS ON SPECIAL AREAS

Fall River Area

The accompanying map (Fig. 1) of the Hazard Inventory shows the location of the four sample plots in the Fall River Area. The loss

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(1) Johnson, P. C. Progress Report, Forest Insect Hazard Inventory, Fall River Area, California. June 14, 1939.

figures on these plots for the past three years are given in Table 1. These four plots, while they give an indication of infestation trends, are not adequate in number to form a basis for an estimation of losses on each unit. The average loss on the four plots during 1940 is estimated at 70 board feet per acre. This represents a decrease in loss from 1939 of 5 board feet per acre. The decrease occurred on Plot 1, which is in Site III, and Plot 3, which is in fringe type with a scattered stand. The other two plots (4 and 9) showed an increase in 1940.

The insect caused losses during the past three years on the four plots in species other than pine are shown in Table II. The Douglas fir loss increased considerably during the current year, but this loss is relatively small. The agency responsible for the loss could not be determined from the basal examinations. The bases of some of the trees were not filled in with insects, while others were infested with miscellaneous secondary insects. Losses in white fir from the fir engraver beetle and unknown agencies continued at approximately the same rate. An occasional dying incense cedar tree was encountered, but for the most part they were overmature and decadent single trees.

Wiley Ranch and Lava Units: The current annual loss on the Wiley Ranch and Lava Units is estimated to average between 100 and 110 board feet per acre. This represents a small increase over 1939. In general these units appear to have the heaviest current loss on the eastern Shasta.

Dana Unit: The insect caused loss on this unit apparently decreased considerably during 1940, averaging approximately 80 board feet per acre. Loss occurred for the most part in large single decadent trees.

Cayton Unit: The insect caused loss on the Cayton Unit is estimated to be between 70 and 80 board feet per acre. There has been some increase in 1940, and judging from the number of trees containing winter brood on Plot 4, there probably will be a continued increase in 1941.

Bear Creek, Dickson Flat and Clark Creek: These units are not sampled by plots and an estimate of volume loss cannot be made. Bear Creek Unit has been largely cutover and therefore the immediate hazard from insects has been removed. Dickson Flat and Clark Creek Units have been classified by the Hazard Inventory as being of low hazard. No outstanding current activity of insects has been noted in these two areas.

McCloud River Basin

This basin of timber which is predominantly a west side type of stand is largely cutover. Losses were light in reserve ponderosa pine stands on cutover lands from McCloud east to Dead Horse Pass. Group losses in knob cone pine thickets occurred this season east of Bartle.

Engraver beetles were involved in these unimportant infestations. Along the northern edge of the valley sporadic logging activities seemed to be responsible for group losses in ponderosa pine and considerable top-killing in pole thickets, reserve stands, and along the margins of the virgin stands north and west of Black Fox Mountain.

Siskiyou Area

The Hazard Inventory map of the Siskiyou area (Fig. 2) shows the location of three cutover sample plots, the boundaries of the seven entomological units, and the various hazard zones set up by the Hazard Inventory. Most of the area is now cutover with small pockets of virgin timber here and there.

Harris Mountain: There was a rather aggressive infestation in the virgin timber (approximately 7000 acres) on this unit in 1939, but a salvage logging and a sanitation-salvage logging job reduced the loss trend. On one section approximately 200 trees containing western pine beetle brood were cut in 1939. According to J. W. Bongberg, who visited this area in October 1940, there is a scattering of 1940 loss with an occasional group containing as many as 10 winter trees. Some of the better-crowned trees were being killed by the western pine beetle.

Tennant and Wild Horse Units: Nearly all of the Tennant and Wild Horse Units have been cutover for some time. Although the residual stands are, for the most part, in very poor condition, the loss on the cutover areas decreased considerably in 1940. The loss on the three cutover plots (Fig. 2) for the past three years is shown in Table III. The average loss for 1940 on these plots is estimated at 16 board feet per acre as compared to 53 in 1939 and 26 in 1938.

While the current windfall loss on Plot CO-1 apparently has not had any direct or indirect effects on consequent insect caused loss, it is worthy of mention. During 1940 there were 50 windfall trees containing 29,000 board feet on this 160 acre plot. In late October these trees contained prepupal flathead larvae. A small number had been infested and abandoned by the western pine beetle. The residual stand on this plot was much greater than on the surrounding area and therefore these windfall losses do not apply to the area as a whole.

Horse Thief, Goose Nest, and Shovel Creek Units: Losses continued to be heavy in the fringe stands of the Horse Thief Unit, but reconnaissance cruises failed to locate any alarming infestations in the Goosenest district. However, the presence of endemic infestations and a large amount of highly susceptible volume in high risk trees constitutes a distinct threat to the present stand in the possibility of future heavy losses.

SUMMARY AND RECOMMENDATIONS

Throughout much of the area surveyed in the Shasta National Forest, losses appear to be continuing on a steady basis. No general marked tendencies towards the development of epidemic conditions were noted this season. Cutover stands in general appear to be in good condition. However, average losses in virgin stands of 70 b.m. per acre per year in the Fall River area and particularly the heavier losses in some of the fringe stands, prompt the recommendation that salvage and utilization of high risk trees might be a paying proposition. The same recommendations can be made for most of the virgin stands, even those on the better sites, for the volume of timber in high risk trees is considerable. In the goosenest area in particular, it seems advisable to salvage and utilize the high risk trees because they represent relatively large proportions of the existing stands.

TABLE I

PLOT LOSSES - SHASTA NATIONAL FOREST

Plot No.	1938				1939				1940 (estimated)			
	Per section		Per A.		Per section		Per A.		Per section		Per A.	
	No. Trees	Volume b.m.	Volume b.m.	Ratio 38/37	No. Trees	Volume b.m.	Volume b.m.	Ratio 39/38	No. Trees	Volume b.m.	Volume b.m.	Ratio 40/39
SH-1	32	60,160	94	3.92	26	87,940	137	1.5	23	50,646	79	0.6
SH-3	12	2,780	4	0.21	54	19,120	30	6.9	28	13,961	22	0.7
SH-4	78	72,240	116	1.09	24	30,080	47	0.4	41	50,094	78	1.7
SH-9	30	24,420	38	0.83	88	55,980	87	2.3	67	64,009	100	1.1
Aver.	38	40,400	63	1.29	48	48,280	75	1.2	40	44,678	70	0.93

TABLE II

INSECT CAUSED LOSSES IN SPECIES OTHER THAN PINE
Per Section Basis

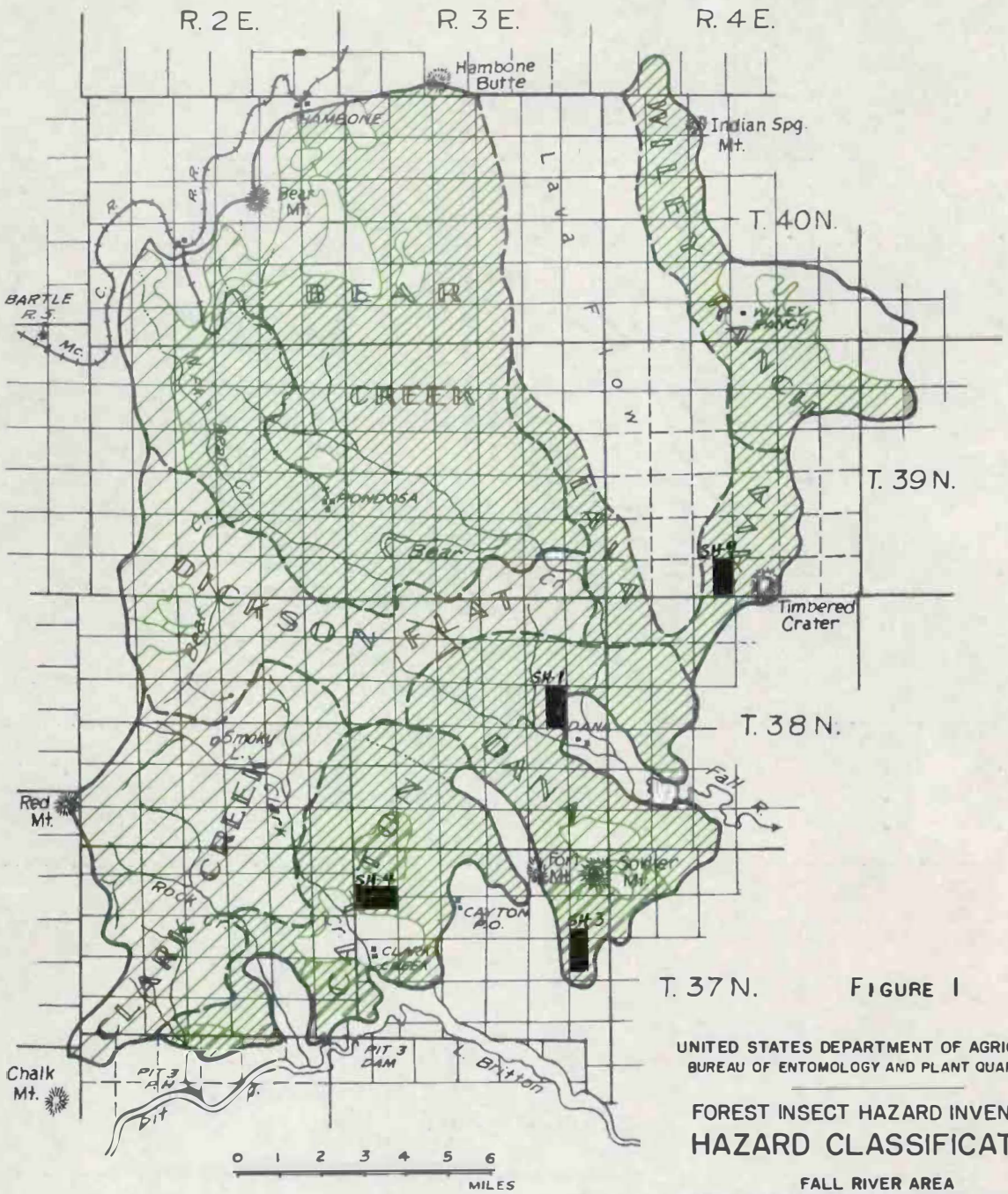
Plot No.	Tree Species	1938 No. Trees	1938 Volume b.m.	1939 No. Trees	1939 Volume b.m.	1940 No. Trees	1940 Volume b.m.
SH-1	Douglas fir	2	440	6	7,180	4	7,260
	White fir	2	3,200	6	8,980	14	5,740
	Incense cedar			4	2,060		
SH-2	Douglas fir					Cutover, 1940	
	White fir	6	10,660	26	22,640		
	Incense cedar	2	920	4	4,220		
SH-3	Incense cedar					2	800
SH-4	Douglas fir	6	5,360	10	11,360	12	22,920
	White fir					2	2,000
	Incense cedar	4	100			6	1,940
SH-9	Incense cedar					4	4,620
Aver.	Douglas fir	1.6	1,160	3.2	3,708	4.0	7,545
	White fir	1.6	2,772	6.4	6,324	4.0	1,935
	Incense cedar	1.2	204	1.6	1,256	3.0	1,840

TABLE III

INSECT CAUSED LOSSES IN PINE ON CUTOVER PLOTS, NORTH SHASTA AREA

Plot No.	Residual Stand 1937*	1938 Per Section No. Trees	1938 Per Section Volume b.m.	1938 Per A. Volume b.m.	1939 Per Section No. Trees	1939 Per Section Volume b.m.	1939 Per A. Volume b.m.	1940(estimated) Per Section No. Trees	1940(estimated) Per Section Volume b.m.	1940(estimated) Per A. Volume b.m.
CO-1	3,410	196	46,360	72	92	83,720	131	78	29,348	46
CO-2	1,323	37	4,533	7	21	17,440	27	18	2,085	3
CO-3	305				4	160				
Aver.	1,679	78	16,964	26	39	33,773	53	32	10,477	16

* 1937 Volume b.m. per acre.



BOUNDARY - ENTOMOLOGICAL UNIT

FIGURE 1

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

FOREST INSECT HAZARD INVENTORY

HAZARD CLASSIFICATION

FALL RIVER AREA
SHASTA AND SISKIYOU COUNTIES, CALIFORNIA

LEGEND

- HAZARD II – LOW
- HAZARD III – MODERATE
- HAZARD IV – HIGH
- SAMPLE PLOTS, ANNUAL FOREST INSECT SURVEY

FIGURE 2

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

FOREST INSECT HAZARD INVENTORY
HAZARD CLASSIFICATION

SISKIYOU AREA
SISKIYOU COUNTY, CALIFORNIA

L E G E N D

- Hazard II – Low
- Hazard III – Moderate
- Hazard IV – High
- Hazard V – Very High
- Cutover
- SAMPLE PLOTS, ANNUAL FOREST INSECT SURVEY
- Boundary of Entomological Units

SCALE
0 1 2 3 4 5 6 MILES

1939